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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/573,942

03/29/2006

Akinobu Sato

NAA237

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09/17/2009

Intellectual Property Law Office of David Lathrop  
No. 827

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EXAMINER

BAND, MICHAEL A

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

09/17/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/573,942	<b>Applicant(s)</b> SATO ET AL.	
	<b>Examiner</b> MICHAEL BAND	<b>Art Unit</b> 1795	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 July 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) 9-13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/29/2006; 5/14/2007; 9/10/2007; 9/14/2007;</u>               | 6) <input type="checkbox"/> Other: _____                          |
| <u>11/24/2008.</u>   |   |



## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of Group I, claims 1-8 in the reply filed on 7/20/2009 is acknowledged. The traversal is on the ground(s) that the two Groups are linked by a single inventive concept since US Patent No. 6,858,512 discloses using a monomer ion beam as opposed to the claimed cluster ion beam. This is not found persuasive because US Patent No. 6,858,512 does not teach using a monomer ion beam but teaches using a an excimer laser light of XeCl or ArF and a reactive ion etching using HBr gas and Cl<sub>2</sub> etching gas, thus US Patent No. 6,858,512 does disclose using gas clusters. In addition US Patent No. 6,858,512 further discloses an ion source using Ar gas, with said ion source using clusters of Ar gas since the Ar atoms are in close proximity to one another.

The requirement is still deemed proper and is therefore made FINAL.

Claims 9-13 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected Group, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 7/20/2009.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Morimoto et al (USPGPub 2002/0000552).

With respect to claims 1-8, Morimoto et al discloses eliminating (i.e. smoothing) projections [100] via irradiation by ion beams [110] at an incident angle  $[\Theta]$  of  $60^\circ$  to  $90^\circ$  to planarize a film surface [13] during a portion of time (abstract; p. 3, para 0050-0053; fig. 3B-C), where fig. 3C depicts the angle of said ion beams [110] with respect to the surface of said film surface [13] as  $\Pi/2 - \Theta$ , where  $\Pi$  equals 180 degrees. Therefore Morimoto et al teaches etching using the ion beams [110] between an angle of  $0^\circ$  to  $30^\circ$ , where the ion beams comprise Ar atoms (i.e. clusters) (p. 4, para 0072 and 0084).

With respect to claim 2, Morimoto et al further discloses the etching rate of the ion beams increasing as the incident angle  $[\Theta]$  increases from  $0^\circ$  (i.e.  $90^\circ$ ) to reach the maximum when said incident angle is  $60^\circ$  (p. 5, para 0089). The Examiner notes that while Morimoto et al states the maximum of  $\Theta$  is  $600^\circ$ , this is believed to be a typo and should read as  $60^\circ$  since the maximum angle that would be used in this situation would be  $360^\circ$ .

With respect to claim 3, Morimoto et al further disclose in fig. 7 a process of repeating a continuous change between the angle equal to or greater than  $30^\circ$  and said angle of less than  $30^\circ$ .

With respect to claims 4-6, Morimoto et al further discloses in fig. 5 the ion beams [110] irradiating at a plane of projection having an angle of the film surface [280]

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between  $0^{\circ}$  and  $30^{\circ}$  in a first direction, where said film surface [280] is capable of being rotated to a second direction different from said first direction in said plane of projection. Morimoto et al also discloses that the angle for the first direction and second direction mutually is between  $0^{\circ}$  and  $30^{\circ}$  (abstract; p. 3, para 0050-0053; fig. 3B-C).

With respect to claim 7, Morimoto et al further discloses in fig. 3E depicts the film surface [13] as a convex portion having side walls.

### ***Conclusion***

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Band whose telephone number is (571) 272-9815. The examiner can normally be reached on Mon-Fri, 9am-5pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

5. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

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USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. B./

Examiner, Art Unit 1795

/Jennifer K. Michener/

Supervisory Patent Examiner, Art Unit 1795